BALTIMORE HARBOR ANCHORAGES AND CHANNELS

MARYLAND AND VIRGINIA

FINAL SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

NOVEMBER 2001

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FINAL SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

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INTRODUCTION

In compliance with the National Environmental Policy Act of 1969 (NEPA), as amended, the U.S. Army Corps of Engineers, Baltimore District has prepared a final environmental assessment (EA) which evaluates and documents the potential environmental effects associated with the proposed reconfiguration of the anchorages and channels in the Baltimore Harbor. A location map of the project is provided in Figure 1. The Baltimore Harbor Anchorages and Channels, Maryland and Virginia Integrated Feasibility Report and Environmental Impact Statement (EIS), dated March 1997, was the NEPA document upon which the Baltimore District based the Record of Decision dated July 2000. Congress authorized the project in October 1999. The revisions addressed in this EA are proposed to address more recent concerns raised by the maritime users of the project, including safety and efficiency issues, as well as cost and benefit considerations. Descriptions of the proposed placement site, dredging area, and associated impacts are discussed in the 1997 integrated feasibility report and EIS and are incorporated into the supplemental EA by reference. New information based on recent studies has been incorporated into this EA.

The 1997 feasibility report recommended the following plan for construction:

(1) widening the West Dundalk and Seagirt-Connecting Channels to 500 feet;
(2) widening the East Dundalk Channel to 400 feet;
(3) establishing a channel 36 feet deep and 400 feet wide in the area of the old Produce Wharf Channel at South Locust Point;
(4) providing cutoff angles at the intersection of the Connecting Channel and the west side of the Dundalk Marine Terminal;
(5) deepening and widening a portion of Anchorage #3 (42 feet deep, 2,200 feet wide by 2,200 feet long);
(6) deepening and widening a portion of Anchorage #4 (42 feet deep, 1,800 feet wide by 1,800 feet long);
(7) constructing a turning basin at the head of the Fort McHenry Channel (1,200 feet wide by 1,200 feet long, and 50 feet deep);
(8) Federal assumption of maintenance of the existing Seagirt, Dundalk, and South Locust Point Channels, exclusive of berthing areas, and the area between the Connecting Channel and the proposed Seagirt Marine Terminal Berth 4 upon completion of dredging to that depth by the State of Maryland;
(9) placement of the dredged material (an estimated 4.4 million cubic yards) at the Hart-Miller Island placement site; and

(10) deauthorization of Anchorage #1.

The authorized plan is shown in Figure 2. The modifications to this plan are given in Section 2.0 Description of the Proposed Action in this EA.

1.0 PURPOSE AND NEED OF PROPOSED ACTION

In March 1997, the Baltimore District Army Corps of Engineers completed the Baltimore Harbor Anchorages and Channels, Maryland and Virginia, Integrated Feasibility Report and Environmental Impact Statement (EIS). In the Water Resources Development Act of 1999, Congress authorized the project recommended in the 1997 report for construction by the Corps of Engineers. The Chief of Engineers signed a record of decision (ROD) for the authorized project in July 2000. The purpose of the authorized project is to provide improvements to the existing anchorages and branch channels within the Port of Baltimore to enhance efficiency in the port and to provide for increasing demand on port facilities by the current and expected vessel fleet.

The purpose of this supplemental environmental assessment (EA) is to address the changes in the project design since the project's recommended plan described in the March 1997 feasibility report. These revisions to the recommended plan are proposed to address local concerns regarding the plan, including safety and efficiency issues, as well as refinements to reduce the project costs and increase the project benefits. All descriptions of the proposed placement sites and any anticipated impacts of these areas are discussed in the 1997 integrated feasibility report and EIS and are hereby incorporated into this document.

1.1 Previous Environmental Documentation

In March 1997, the final integrated feasibility report and EIS was prepared in accordance with the provisions of NEPA, the Council of Environmental Quality (CEQ) Regulations 40 CFR 1500-1508, U.S. Army Corps of Engineers Regulations 200-2-2 "Procedures for Implementing NEPA," and 33 CFR 230. The March 1997 integrated feasibility report and EIS is incorporated by reference into this supplemental EA and is available from the Baltimore District, upon request.

2.0 DESCRIPTION OF THE PROPOSED ACTIONS

2.1 Proposed Action-Revisions to Project Design

The revised project proposes the following changes to the original recommended plan (Figure 3):

Comparison of Existing Conditions, 1997 Plan and Proposed Revisions.

Site	Existing Condition	1997 EIS Plan	Revised Plan in EA
Dredging Yardage	Not Applicable	4.4 million cubic yards	3.9 million cubic yards
Anchorage #3	35'd x 4500'w x 1500'l	42'd x 2200'w x 2200'l & remnant 35'd x 2300'w x 1500'l	Subdivided 42.5-foot area into #3A and #3B. #3A: 42'd x 2200'w x 2200'l; #3B: 42'd x 1800'w x 1800'l & remnant 35'd 500'w x 1500'l
Anchorage #4	30'd x 1200'w x 2400'l	42'd x 1800'w x 1800' l	35'd x 1800'w x 1800'l
East Dundalk Channel	42'd x 300'w	38'd x 400'w with widening at bends and entrances	42'd x 400'w with widening at bends and entrances
Seagirt/West Dundalk Connecting Channel	42'd x 350'w	42'd x 500'w	42'd x 500'w
South Locust Point Channel	28'd	36'd x 400'w with widening on the bends and entrances	36'd x 400'w with widening on the bends and entrances
Ft. McHenry Turning Basin	20 to 50' deep	50'd x 1200'w x 1200'l with widening at the entrance	50'd x 1200'w x 1200'l with east corner deleted (location realigned)

1. The quantity of material that will be dredged will be reduced from approximately 4.4 million cubic yards to approximately 3.9 million cubic yards. Proposed placement of the dredged sediments will occur at the Maryland Port Administration's Hart-Miller Island Containment Facility, Baltimore County, Maryland.
2. Anchorage #3 will be reconfigured to include two sections, #3A which is a 2,200-foot by 2,200-foot, 42-foot deep section, and #3B, a 1,800-foot by 1,800-foot, 42-foot deep section. Anchorage 3 is presently 35 feet deep by 4,500 by 1,500.
3. Anchorage #4 will be dredged to a depth of 35 feet mean lower low water (MLLW), not 42 feet as indicated in the EIS.
4. The widening of the East Dundalk Channel will be federally maintained at the 42-foot depth, not 38 feet deep as indicated in the EIS. The new depth corresponds to the depth that the State of Maryland now maintains in this channel.
5. The South Locust Point Channel will remain the same, 36 feet wide by 400 feet long by 36 feet deep, with the exception of an increased size in the widener on the outbound channel where it intersects with the berthing area. The widener has increased by 225 feet to round out the corner of this intersection.
6. The turning basin at the head of the Fort McHenry Channel will be moved slightly eastward so as to encompass an existing deep water area, reduce dredging yardage, and provide safer access to the nearby piers.

The quantities of dredged material in cubic yards that would be dredged from each area are given below.

- East Dundalk Channel is presently maintained at a 42-foot depth. Its depth would not change. As proposed in the 1997 report and currently recommended, this channel would

be widened from 300 feet to 400 feet. Approximately 62,500 cubic yards of material would be dredged.

- Seagirt/West Dundalk Connecting Channel is presently 42 feet deep. As proposed in the 1997 report and currently recommended, this channel would be widened from 350 feet to 500 feet. Approximately 259,100 cubic yards of material would be dredged.

- South Locust Point Channel would be extended to include the fruit pier channel. South Locust Point Channel is presently approximately 28 feet deep. It would be deepened to 36 feet deep. The new channel width would be 400 feet. Approximately 187,900 cubic yards of material would be dredged. South Locust Point Channel cutoff angles are presently approximately 28 feet deep. They would be deepened to 36 feet deep and the ends would be widened to 400 feet.

- Anchorage #3, which is presently 35 feet deep by 4,500 feet by 1,500 feet, has been replaced with Anchorages #3A and #3B. Anchorage #3A would be 42 feet deep and 2,200 feet wide by 2,200 feet long. Approximately 1,477,100 cubic yards of material will be dredged for this section. Anchorage #3B would be 1,800 feet by 1,800 feet by 42 feet deep. Approximately 919,800 cubic yards of material would be dredged.

- Anchorage #4 is presently 30 feet deep. It would be deepened to 35 feet. It is presently 2,400 feet long by 1,200 feet wide and would be reconfigured to 1,800 feet by 1,800 feet. Approximately 683,100 cubic yards of material would be dredged.

- The Fort McHenry turning basin would be created. Present depths in the area are from the low 20's to 50 feet MLLW. The turning basin would be 1,200 feet by 1,200 feet wide and 50 feet deep. Approximately 322,300 cubic yards would be dredged.

2.2 Placement Sites

The dredged material from initial construction will be placed at Hart-Miller Island. Several placement sites identified in the March 1997 feasibility report and integrated environmental impact statement, and incorporated herein by reference, do not allow for adequate placement capacity to accept initial construction dredged material from the Baltimore Harbor Anchorages and Channels project. These sites include Cox Creek, Sollers Point, Masonville, Thoms Cove, and Dead Ship Anchorage. These sites will be used for the ongoing maintenance of the Inner Harbor anchorages, channels, and non-Federal projects. For the Baltimore Harbor and Anchorages project, maintenance dredged material will be placed at Hart-Miller Island until 2009. Placement during the remainder of the 20-year requirement is expected to be at Cox Creek. The Corps of Engineers is currently evaluating a permit request from the Maryland Port Administration for the Cox Creek project.

3.0 JUSTIFICATION FOR CHANGES

A full analysis of alternative dredging plans and the no action alternative was conducted in the 1997 EIS and is hereby incorporated into this EA by reference.

During the course of the pre-construction engineering and design phase, the design of the channels and turning basin described in the 1997 feasibility report was subjected to a ship simulation study. This study was conducted by the Waterways Experiment Station (WES) with assistance from the Association of Maryland Pilots. This study confirmed that the recommended channel configurations were appropriate with the exception of the South Locust Point Channel. It was determined that increasing the size of the proposed widening on the outbound side of the channel where it intersects the berthing area would eliminate a difficult exiting from the berthing area (Figure 4). The modified channel will increase efficiency and safety when using this channel.

In addition, the maritime pilots raised concerns about the Fort McHenry turning basin. The pilots did not consider the previously recommended configuration to be optimal for turning vessels of 1,000 feet or longer that exit from the piers north of the turning basin. These ships are currently backed into the channel and as the bow clears the pier, the ship is then turned in a clockwise direction as soon as possible to keep the ship from backing too far across the channel and possibly into the opposite bank. Also, as the ship is backing across the channel, the pilots prefer to keep the bridge, which is about 200 feet from the stern, on the centerline of the channel so the pilot can keep visually aligned with the channel ranges. This ensures that the stern does not drift into the bank and cause possible damage to the rudder and propellers. To address these concerns, the turning basin has been shifted to the northeast 350 feet and down the Fort McHenry Channel centerline about 500 feet**.** Also, to eliminate unnecessary dredging, the east corner of the turning basin has been deleted from the project. These changes were coordinated with WES and recommended for inclusion in the revised project plan. The modifications to the Fort McHenry turning basin are illustrated in Figure 5.

In addition, based on the Section 106 coordination between the Baltimore District and the Maryland Historical Trust, the turning basin was shifted again to avoid a potential cultural anomaly, that could possibly be a wooden ship or barge identified in the Phase I Cultural Survey. The turning basin was shifted an additional 150 feet down the Fort McHenry centerline to avoid detrimental contact with the anomaly during dredging operations (see Section 4.9).

The plan recommended in the feasibility report was also reviewed by the Baltimore District Value Engineer, and subjected to a value engineering (VE) study. The VE study found that additional benefits could be realized by altering the size and configuration of Anchorages #3 and #4. The VE study recommended that Anchorage #4 remain in its current configuration and size with a reduction in the depth to 35 feet and that Anchorage #3 be configured as two sections, essentially doubling the anchorage width. The advantages of having two 42-foot deep anchorages located together would be to enhance navigation flexibility and safety. An uninterrupted 4,400-foot long area for the use of deep draft vessels could be used for anchoring two large ships, and one anchorage space could be utilized as a holding area for

passing. The VE study also suggested that further economic analysis be conducted to assure the best anchorage configuration is selected.

Subsequently, the project team undertook a re-analysis of 11 possible anchorage configurations, which included the original authorized plan plus ten other possible combinations of Anchorages #3 and #4; the sections of Anchorage #3 were designated as #3A and #3B. The costs and benefits for the entire project, incorporating all of the design changes from the recommended plan described above, were then calculated for the years 2000 and 2010. Although the analyses considered a 50-year project life, it was assumed that there would be no change in the traffic profile after 2010. The model runs to calculate the economic benefits for 2020, 2030, 2040, and 2050 were assumed to be identical to 2010. Therefore, the year 2010 was felt to be representative for comparison purposes.

All eleven plans are compared in Tables 1 and 2 in Appendix A. These plans were reviewed and discussed with the Maryland Port Administration, the Association of Maryland Pilots, and the Baltimore District project team to determine the anchorage configuration which best suited the needs of the Port and returned the most benefits compared to the cost of construction and maintenance. Plan 7, which had the second highest benefit-cost ratio was considered the best alternative with acceptable costs and that would meet the needs of the port. Plan 7, which includes two 42-foot deep sections (one 2,200 feet wide by 2,200 feet long and one 1,800 feet wide by 1,800 feet long), is what is now proposed. When measured against the other plans, Plan 7 does not have any more impact on the human environment than any of the other plans. This plan will utilize the same placement site as the 1997 proposal. The Anchorage #3 modifications from this plan are illustrated in Figure 3.

4.0 AFFECTED ENVIRONMENT

4.1 Project Area Description

4.1.1 Bathymetry

The existing project areas are naturally deep. The depths have also been altered by previous dredging projects to deepen the areas to accommodate deep draft vessels.

The water depths at Anchorage #4 currently range from 28 feet MLLW to 50 feet MLLW. This area has been dredged in the past to 50 feet MLLW. Areas adjacent to Anchorage #4 are 15 to 16 feet MLLW.

Anchorage #3 is currently maintained at 35 feet MLLW. The depths in the area to be dredged vary from 25 to 50 feet. The Fort McHenry Channel, located to the south of this anchorage, is maintained at 50 feet MLLW.

The Dundalk East Channel, located to the south of Anchorage #4, was dredged to 42 feet MLLW. A small area adjacent to this channel, which is to be included in the new channel configuration, is currently 26 to 40 feet MLLW.

The Dundalk West Channel was dredged and is maintained at 42 feet MLLW. The area where the channel widening is to occur, adjacent to the channel, is currently 27 to 40 feet MLLW. The connecting channel between the east and west channels is currently maintained at 42 feet MLLW.

The Fort McHenry channel in the vicinity of the proposed turning basin is currently maintained at 50 feet MLLW. The adjacent area that will form part of the turning basin is currently 23 to 50 feet MLLW. Areas adjacent to this channel have depths ranging from 19 to 40 feet MLLW. There is also a 50-foot deep channel adjacent to the turning basin maintained by Consolidated Coal.

The South Locust Point Channel has been dredged previously to 36 feet. The current depths in the channel range from 25 to 31 feet MLLW. The adjacent areas, which will be altered by the channel widening, are currently 21 to 33 feet deep.

4.1.2 Land and Water Use

The land surrounding Baltimore Harbor is highly developed. More than 43 percent of the defined area is industrial, and 7.5 percent is classified as commercial. Only 34 percent of the area consist of urban and residential land use. Water use is predominantly related to commercial shipping due to the extensive public and private port facilities, and the deep draft channel system. Other water uses include recreational boating and commercial fishing.

4.1.3 Sediments

The Chesapeake Bay is located in the Atlantic Coastal Plain physiographic province and is underlain by sequences of clay, silt, sand, and gravel. These geologically unconsolidated sediments date from the Cretaceous, Tertiary, and Quaternary Periods. The general geologic setting of the Baltimore Harbor is comprised of a series of wedge-shaped sediment layers dipping and thickening bayward. The older and generally harder Cretaceous sediments are encountered farthest to the north and west within Baltimore Harbor, while younger and less compact Tertiary and Quaternary sediments are typically encountered eastward. The harbor floor is covered with a layer of mud.

Sediments serve as a sink and a source of natural materials, as well as organic contaminants that bind to fine particulates that may be deposited and buried within sediments. Disturbance by dredging can re-mobilize contaminants and particulates from the sediment into the water column. Areas proposed for dredging in urbanized watersheds can contain measurable quantities of contaminants that arise from both point sources (e.g., industrial and municipal effluents) and non-point sources (e.g., stormwater runoff, agricultural runoff, and atmospheric deposition). Additional information regarding the sediments found in the project area is provided in the 1997 EIS. More information on the Hart-Miller Island placement site may be found in the 1997 EIS. The material to be dredged from the proposed dredging area is suitable for placement at the Hart-Miller Island placement site.

4.1.4 Climate

The project area has a continental-type climate with four distinct seasons, although extreme winter and summer temperatures are moderated somewhat by the Chesapeake Bay. The average annual temperature is 62 degrees Fahrenheit (°F), with the highest temperatures occurring in late July (the average maximum is 89°F) and the lowest temperatures occurring in January and February (the average minimum is 21°F).

Annual precipitation ranges from 40 to 44 inches, distributed fairly evenly throughout the year. The lowest average monthly precipitation (2.57 inches) occurs in January and the highest (4.26 inches), in August. Winter low-pressure systems moving up the Atlantic Coast cause most of the precipitation during the cold months, while summer showers and thunderstorms provide warm weather precipitation. Average snowfall in the project area is 20 to 25 inches, mainly occurring in December, January, and February.

The prevailing winds are southerly from May through September and west-northwesterly to northwesterly during the rest of the year. Hurricanes, blizzards, tornadoes, and other destructive storms are uncommon.

4.2 AIR QUALITY

Sections 109 and 301(a) of the Clean Air Act as amended in 1990 [42 U.S.C. 7409(a)], and Environmental Protection Agency (EPA) implementing regulations (40 CFR Part 50) define national, primary, and secondary ambient air quality standards as judged necessary to protect public health and welfare for "criteria" pollutants. EPA regulations establish National Ambient Air Quality Standards (NAAQS). The agency publishes a list of all geographic areas relative to their compliance with NAAQS. Areas where NAAQS are being achieved are designated as "attainment" areas and are subject to Prevention of Significant Deterioration (PSD) regulations. Areas not in compliance are designated as "non-attainment" areas. The proposed project, which is in the northern part of the bay, is in a non-attainment area for ozone. According to MDE, the project impacts on air quality are *de minimus* based on regulations for non-attainment areas. There are several major point sources of air pollution near the project area that are part of MDE's point source baseline, and MDE is evaluating these sources in an effort to reduce emissions. Baltimore City also impacts air quality in the project area with its transportation, infrastructure, industry, and power plants.

4.3 WATER QUALITY

Water quality conditions in the Chesapeake Bay area vary due to many factors including proximity to urban areas, type and extent of industrial activity, streamflow characteristics, and amount and type of upstream land and water usage. Water quality in the project area is poor.

The water quality in the Harbor is impacted by the heavy volume of urban runoff in combination with industrial and commercial discharges. Polluted discharge and runoff from

land activities have degraded the overall water quality as well as the bottom habitat. Nutrient levels are relatively high and algae blooms are frequent. During summer months, waters separate into lower salinity, warm surface waters and higher salinity, cool deeper waters. Saline waters at greater depths frequently become hypoxic (dissolved oxygen less than 2 mg/1) during the summer months. Natural factors also influence water quality. The project area lies just to the south of the turbidity maximum of the Upper Bay, and suspended sediment levels may reach 150 mg/liter.

4.4 BIOLOGICAL RESOURCES

The biological resources in the Baltimore Harbor area have been reduced over the years. The wide variety of pollutants released into the Harbor by past extensive industrial development in the area and port-related activities has had a severe impact on the biota. Contemporary pollution into the harbor is having a negative impact to biological resources, but impacts are not as great as in the past. Previous studies of materials in the harbor have indicated that the levels of some contaminants are likely to be harmful to some species of aquatic organisms.

The dredged material will be placed in the State of Maryland-permitted Hart-Miller Island confined upland placement facility. Primary discharge is monitored at Hart-Miller Island. The purpose of this sampling is to provide an in-depth analysis of the discharges from the site. Monitoring includes semi-annual analysis of more than 120 potential contaminants. This monitoring is also repeated in adjacent Bay waters. Aquatic toxicity testing of the effluent is performed every 6 months.

4.4.1 Benthic Resources

Currently, the benthic macroinvertebrate community in Baltimore Harbor is substantially poorer in biomass and species diversity compared to historical conditions and to other areas in the Chesapeake Bay. Although benthic communities are degraded, they are improving due to recent environmental laws and regulations.

Few mollusks and crustaceans can be found in the area, and no oyster bars are known to exist in the Harbor today. The layer of fluid mud that exists in most of the project area constitutes a poor substrate for many benthic species. The benthic communities that survive in the project area are not well developed and are comprised of mainly pollution-tolerant species.

A 1975 study found that the tubifex worm, a species tolerant of pollution, was fairly common in the Harbor, but that crustaceans and mollusks (species relatively intolerant to pollution) were scarce. The low biomass and diversity of benthic organisms indicate that conditions in the area can be characterized as semi-polluted to polluted.

A 1983 study of the benthic community found that diversity declined from the mouth of the Harbor to its head. The benthos consisted mainly of ephemeral, surface-dwelling opportunistic species in the region of the anchorages, while longer-lived, deep-dwelling species were absent. Annelids, marine worms that live in sediments closest to the surface, comprised over 90 percent of the benthic community. The study found that larvae of the

common Baltic clam (*Macoma balthia*) settled in the project area in large numbers; however, they did not survive to achieve significant growth.

4.4.2 Fish and Wildlife

A number of resident and migratory fishes inhabit Baltimore Harbor, although the abundance of species in Baltimore Harbor is dramatically reduced. There are very few bottom-dwelling species present, and there is a high occurrence of diseased fish.

It is expected that the low numbers and the loss of diversity of fish in the project area is partly a result of the water quality problems and degraded benthic habitat. Anadromous species, particularly alewife (*Alosa pseudoharengus*), blueback herring (*A. aestivalis*), and American eel (*Anguilla rostrata*) migrate through the Patapsco estuary en route to and from spawning areas in the upper non-tidal section of the river. Other migratory and resident fishes found in Baltimore Harbor include white perch (*Morone americana*), anchovy (*Anchoa mitchilli*), hogchoker (*trinectes maculatus*), silversides *(Menidia menidia*), bluefish (*Pomatomus saltatrix*), channel catfish (*Ictalurus punctatus*), and striped bass (*M. saxitilis*); the blue crab (*Callinectes sapidus*) is a common shellfish in the harbor. White perch is the most abundant migratory species, with large numbers of both adults and juveniles present.

The U.S. Fish and Wildlife Service (USFWS) reports the existence of two waterbird nesting colonies near the Harbor. An established colony of Black-Crowned Night Herons, consisting of approximately 350 breeding pairs, nest at Sollers Point near the northern end of the Francis Scott Key Bridge. This is approximately 6,000 feet from the nearest proposed dredging site (Figure 1). Approximately 500 pairs of herring gulls nest at a site on Sparrows Point. Many resident species such as Great Blue Herons, Cormorants, and Osprey are also located in the study area. Additionally, a variety of waterfowl species winter in the Harbor area. These include Mallards, Scaup, Bufflehead, Goldeneye, Ruddy Duck, Canvasbacks, Canada Geese, and Black Duck.

4.4.2.1 Essential Fish Habitat Evaluation

Pursuant to Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act, preparation of an essential fish habitat (EFH) assessment is necessary for the Baltimore Harbor Anchorages and Channels, Maryland and Virginia, dredging project to address potential impacts to any areas designated as EFH. In January 2001, the National Marine Fisheries Service (NMFS) stated that the proposed work would take place within EFH for bluefish *(Pomatomus salatrix*) for juvenile and adult life stages. Most of the alternatives considered lie within the general reach of EFH for bluefish. In the National Oceanic and Atmospheric Agency National Marine Fisheries Service (NOAA/NMFS) Technical Memorandum NMFS-NE-144, Essential Fish Habitat Source Document: Bluefish, *Pomatomus saltatrix*, Life History and Habitat Characteristics, juvenile bluefish are rated as abundant in the Chesapeake Bay mainstem MD/VA (i.e., lower Chesapeake). Juvenile and adult bluefish are listed as common for the Chesapeake Bay mainstem within the mixing and seawater zones. This EFH assessment relies heavily on this NOAA/NMFS technical document.

Bluefish are voracious predators. Several studies have suggested that juvenile and adult bluefish will eat whatever taxa are locally abundant. They are sight feeders throughout the water column, with smaller individuals feeding on a wide variety of fishes and invertebrates, and with large bluefish feeding almost exclusively on fishes, particularly Atlantic menhaden (*Brevoortia tyrannus*), bay anchovies (*Anchoa mitchelli*), and Atlantic silversides (*Menidia menidia*). Impacts to bluefish prey are not anticipated in deep-water areas because the young of species such as bay anchovy, menhaden, and Atlantic silversides are found predominantly in shallow waters less. Spawning of menhaden occurs near the mouth of the bay or offshore. Bay anchovies broadcast spawn in warmer months. Silversides can begin spawning as early as March in the estuary, but prefer shallow areas.

Bluefish spring spawning occurs during the coastal ocean migration from Florida to southern North Carolina, and summer spawning occurs further offshore in the mid-Atlantic. In the Maryland and Virginia area, peak spawning occurs in July in the Atlantic Ocean over the outer continental shelf. Bluefish are warmwater migrants and do not generally occur in Mid-Atlantic estuarine waters at temperatures less than 14-16°C (57-61°F). Bluefish travel in schools of like-sized individuals and undertake seasonal migrations, moving into the Mid-Atlantic Bight during spring. Juveniles (including the young of the year) begin to depart the Mid-Atlantic estuaries and move into the Atlantic Ocean in October and travel as far South as Cape Hatteras and Florida to overwinter.

A general analysis of impacts on this species and its EFH follows is provided in Section 5.4.

4.4.3 Submerged Aquatic Vegetation

Surveys performed by the EPA have indicated that there is no submerged aquatic vegetation (SAV) in the project area. Review of the Virginia Institute of Marine Science surveys since 1994 indicate that there are no SAV resources in the areas proposed for dredging. In addition, the depths of much of the project area which ranges from 23 to 35 feet, are not conducive to the establishment of SAV.

4.4.4 Wetlands

The tidal wetlands that once occupied 3 square miles of the Harbor area have been virtually eliminated over time by industrial and commercial development, reducing the quality of environmental resources in the area. The remaining wetlands in Baltimore Harbor consist primarily of patches of common reed *(Phragmites communis)*, which are less valuable to fish and wildlife than historic undisturbed marshes. The project area is located in deep water, which does not support vegetated wetlands.

4.5 THREATENED AND ENDANGERED SPECIES

The USFWS, in its Section 7 coordination letter, identified two Federally listed endangered species in the Baltimore Harbor area. Peregrine Falcons have been consistently observed nesting in downtown Baltimore at the Inner Harbor. Another pair of falcons nests less

successfully on the Key Bridge shown on Figure 1. Their diet generally consists of pigeons, but they occasionally will prey on various waterbirds. A Bald Eagle nest site is located in the vicinity of Black Marsh near the mouth of Back River, approximately 7 miles from the project area. Bald eagles feed primarily on fish.

4.6 PRIME AND UNIQUE FARMLANDS

There are no prime and unique farmlands located within the project area.

4.7 WILD AND SCENIC RIVERS

There are no wild and scenic rivers located in the project area.

4.7.1 AMERICAN HERITAGE RIVERS INITIATIVE

There are no American Heritage rivers located within the project area.

4.8 RECREATION

The recreational setting in the Port of Baltimore is generally limited to boating-related activities. Located only 12 miles northwest of the Chesapeake Bay, the Baltimore Harbor is attractive to recreational boating enthusiasts, both private boat owners and commercial recreation craft, and to commercial shipping agents. Recreational fishing activity occurs primarily in the outer regions of the Harbor and in the Chesapeake Bay. Sport fish frequently known to occur in the Patapsco river area include white perch, channel catfish, striped bass, bluefish, and blue crab.

4.9 CULTURAL RESOURCES

Cultural resources in the project area were investigated and discussed in the 1997 integrated feasibility report and EIS. This background information on the cultural resources is incorporated into this document by reference. In 1997, the Baltimore District determined that the Baltimore Harbor Anchorages and Channels project would have no effect on cultural resources.

Although the area proposed for dredging has been highly disturbed by past harbor activities and development, the project team determined that further investigation of the resource was necessary for the new location of the proposed turning basin area. A Phase I remote sensing marine survey of the turning basin for the Baltimore Harbor Anchorages and Channels Project was conducted in July 2000. The study area for this survey consisted of a single survey block measuring 1,600 by 1,400 feet (488 meters by 427 meters). The goal of this investigation was to locate any magnetic or acoustic anomalies that could represent potentially significant submerged cultural resources within the turning basin that would be affected by the proposed dredging construction. A total of eight clusters or targets of magnetic and acoustic anomalies was identified. Seven of these targets appear to reflect the characteristics of modern debris. The eighth target has characteristics consistent with a barge

or similar large, wooden hulled vessel. Avoidance or Phase II evaluation of this target was recommended because of its potential for cultural significance.

Through agency consultation in a meeting on November 17, 2000 between the Maryland Historical Trust (MHT) and the Baltimore District, the Baltimore District agreed to relocate the proposed turning basin to avoid the eighth target and eliminate the need to conduct a Phase II investigation. The November 27, 2000 coordination letter between the MHT and the Baltimore District documenting this decision and its acceptance by the MHT is located in Appendix C.

4.10 HAZARDOUS, TOXIC, AND RADIOACTIVE SUBSTANCES (HTRS)

Port-related activities that handle or store hazardous materials, including oil, chemical, coal, steel, and ore companies, have the potential to release HTRS into the Harbor during transfer operations or material handling, such as off-loading of fuel oils from tankers, lightening of cargo, and bunkering. The port has a long industrial history. Corps regulations require documentation of the existence of Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) and National Priority List (NPL) sites within the boundaries of a proposed project that could impact, or be impacted by, the presence of HTRS contamination. USACE regulation ER 1165-2-132 states that dredged material and sediments beneath navigable waters proposed for dredging qualify as HTRS only if they are within the boundaries of a site designated by the EPA or a state for a response action, such as removal or remediation under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). Information about chemical contamination in Baltimore Harbor sediments was collected from several sources, including searches of Federal and State environment databases, and a field investigation that was conducted in 1994. Data supplied by the MDE identified 71 CERCLIS sites in Baltimore and Anne Arundel Counties, none of which was within 0.5 mile from the project area. A second database search, conforming with the American Society of Testing Materials (ASTM) standards and including access to 13 databases, confirmed that no CERCLIS or NPL sites were reported within the project area or within a 0.5-mile radius around the project area. The second analysis covered records for environmental permits, underground storage tank registrations, hazardous material spill incidence, Polychlorinated Biphenyls (PCB's), violations under the Resource Conservation and Recovery Act (RCRA), toxic release inventories, and sites that generate, transport store, treat, and/or dispose of hazardous waste. Over 600 entries were identified within a 3-mile radius of the center point of the project area.

Four of these sites in the search were identified as limited within or touching the 0.5-mile boundary around the study area. One site is located within the study boundary just north of the Seagirt-Dundalk study area; the second is also within the study boundary, just north of the Ferry Bar Channel. The other two sites are located just outside of the study area, but touching the 0.5-mile boundary area. Each of these two sites represents two separate potential environment target sites, and both are located north of the Ferry Bar Channel study area. Based on the information provided in the database search, it does not appear that any of these four sites represents environmental hazards.

None of the proposed changes to the anchorage and channels requiring this supplemental EA are located within any of the four potential target sites mentioned above.

The field investigation, performed in April 1994, is documented in the 1997 EIS. The purpose of the investigation was to measure levels of contaminants in the project area. The results of the chemical testing conducted indicated that the samples did not exceed Federal and State hazardous waste limits.

4.11 FLOODPLAIN PROTECTION E. O. COMPLIANCE

Under executive Order #11988, issued on May 24, 1977, Federal agencies are required to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of the floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. There are no floodplains in the impact area or the disposal sites.

4.12 AESTHETICS

The visual panorama in the project area is typical of commercial/industrial ports. Many container vessels, tankers, bulk carriers, general cargo vessels, and other large commercial vessels use the anchorages and other port areas that will be dredged as part of the project. There is general and constant activity as large vessels arrive and depart and many smaller commercial vessels move around the Harbor and anchorage areas. The existing visual image is one of a working harbor area.

Prior to construction of the Hart-Miller Island placement facility, citizens were concerned about the potential impact the project could have on aesthetics in the project area. Concerns were expressed regarding the blocking of views and the impact of the project on aesthetics resources in the area. This issue is still a concern to citizens and citizens groups. The MPA is committed to planting and landscaping the site.

4.13 SOCIO-ECONOMIC

Since its founding in 1706, the Port of Baltimore has been a major impetus for growth and economic development. This influence has been, and continues to be, manifested not only at a local and regional level, but also at the national level. The Port of Baltimore's influence extends beyond the boundaries of the State of Maryland to the Midwest, north into the Canadian provinces, and beyond the Atlantic Coast to the port's European and Asian trading partners. From its central location on the Chesapeake Bay, nearly 150 miles inland from the Atlantic Ocean, Baltimore easily provides service to America's Midwestern markets, as well as other ports along the Atlantic Coast. Since 1980, over one-half billion dollars have been spent on maritime improvements in the Port of Baltimore in efforts to meet the needs of the diverse commercial shipping market.

Located in the center of the Boston-Atlanta Corridor on the Atlantic Seaboard, Maryland is the 19th most populous state in the nation and exhibits a per capita income that is the 5th

highest in the nation. More than 80 percent of Maryland's 5.0 million residents live in the Baltimore-Washington corridor (1995 estimate).

4.13.1 Population

In 1996, the Office of Management and Budget (OMB) designated the Washington and Baltimore Metropolitan Areas as the country's 4th largest Consolidated Metropolitan Statistical Area (CMSA), ranking behind only the New York-New Jersey CMSA; the Los Angeles-Riverside-Orange County CMSA; and the Chicago-Gary-Kenosha CMSA. Population statistics from the 1990 census indicate that the Washington-Baltimore CMSA had a total population of 6,727,050. The Washington, D.C., Primary Metropolitan Statistical Area (PMSA) registered a 1990 population of 4,223,485 while the Baltimore, Maryland, PMSA registered a population of 2,382,172.

4.13.2 Employment/Industry

The study area provided employment to 3,581,926 people, based on the results of the 1990 census. This employment was based on a civilian labor force total of 3,736,265, and does not include individuals employed by the Armed Forces. Given the 1990 unemployment figure of 154,339, the Washington-Baltimore CMSA study exhibits a relatively low unemployment rate of 4.1 percent. Unemployment in the study area has historically been below the national average, due largely to the presence of the Federal government in the region and to the diversity of the region's economy. Individuals, 16 years of age or over, who are employed in the study area, work in a variety of occupations distributed over many industrial sectors. Executive, administrative, and managerial positions; professional specialty occupations; administrative support positions; sales; and service position occupations account for more than 2.5 million of the 3.5 million people employed in 1990. Industry sectors employing major portions of the workforce include construction (7.5 percent), manufacturing (8.4 percent), retail trade (14.3 percent), public administration (13.7 percent), health services (7.6 percent), and educational services (7.7 percent). Major employers in the study area include Bethlehem Steel, General Motors, Lockheed-Martin, Marriott International, McCormick and Company, IBM, Mobil Corporation, and USAir.

One of the largest employers and revenue producers in the region is the Port of Baltimore. The port generated 40.1 million tons of commerce in 1998. A recent analysis of job creation by the port indicates that nearly 127,000 jobs are directly or indirectly tied to commodity movement and vessel activity in the port. Slightly more than 50 percent of these jobs are held by Maryland residents and more than 18,000 are jobs directly generated by (and wholly dependent upon) activities at the Port of Baltimore. Revenue generated by the movement of cargo and vessels through the port is estimated to have been $1.4 billion in 1998. This estimate is based on revenues accruing to various sectors, including maritime services, surface transportation, State and Federal government, and financial and legal services.

4.13.3 Education

More than 80 percent of the adult population in the Washington-Baltimore CMSA are high school graduates. Nearly 32 percent of the adult population hold a college degree, which is the highest percentage in the country and nearly twice the national average. Moreover, five of the ten counties in the United States with the highest educational achievement are located in the Washington-Baltimore CMSA.

4.13.4 Transportation

The study area is centered in one of the nation's most comprehensive transportation networks along the Eastern Seaboard. Three major airports serve the region, offering a variety of commuter, national, and international flights. Major rail service is provided primarily by CSX Transportation, Conrail, and Amtrak. Additionally, commuter service to and from Washington and Baltimore is provided by the State of Maryland through its commuter rail service (MARC). Light rail systems in the study area together with two major and modern subway systems provide efficient and convenient means of commuter transport.

The study area provides a safe, efficient, and extensive network of interstate roads and highways including I-95, I-81, I-83, I-70, I-270, the Washington Beltway (I-495), and the Baltimore Beltway (I-695). These highway systems are used extensively by approximately 5,000 private truck haulers and independent common and contract haulers within the study area. The Port of Baltimore has superior container-handling and auto-handling facilities, as well as modern facilities for loading and unloading a full range of bulk and general commodities. The port is serviced by a 50-foot main channel that ranks Baltimore as one of the world's deepest ports. Cruise ships increasingly call on the Port of Baltimore, and plans are underway to study the feasibility of expanding cruise ship operations.

4.13.5 Environmental Justice E.O. Compliance

Executive Order 12898, "Federal Actions to Address Environmental Justice and Minority Populations and Low Income Populations," issued on February 11, 1994, requires Federal agencies to identify and address as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations. Federal agencies in compliance with NEPA must assess its actions on minority and low-income populations and identify disproportionately high adverse health or environmental effects on minority populations and low-income populations. The dredging project is located in an open water area. There are no populated areas within the location of the project; there are no low-income or minority populations there. The disposal area is located on an island, which is not inhabited; low-income or minority populations do not exist at the disposal area.

4.13.6 Children's Safety E. O. Compliance

On April 21, 1997, the President issued Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks," which recognizes that a growing body of

scientific knowledge demonstrates that children may suffer disproportionately from environmental health and safety risks. This E. O. requires Federal agencies, to the extent permitted by law and mission, to identify and assess such environmental health and safety risks.

5.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

This section describes the environmental impacts of only the revised portions of the anchorages and channels. Since there is no change in the study area, the impacts associated with the location and construction of the anchorages and channels and the placement of the dredged material at the Hart-Miller Island placement facility are the same as discussed in the 1997 EIS. Impacts to the placement site and the proposed anchorages and channels that are not part of the revised proposal are discussed in the 1997 EIS and are hereby incorporated into this EA.

5.1 PROJECT AREA DESCRIPTION

5.1.1 Bathymetry

The depths of the anchorages and channels areas will be increased in some areas as a result of the proposed work while in some areas the required depths will be reduced. Anchorage #4 is to be maintained at 35 feet MLLW. The current depths range from 28 to 50 feet in the old anchorage alignment. The current depths in the new area of Anchorage #4 will be also be deepened (from the current depths of 17 to 28 feet) to 35 feet. Anchorage #3A and #3B (formerly called Anchorage #3) will now be deepened or maintained at a 42-foot depth. The Dundalk East and West Channels and the connecting channel will be maintained at their current 42-foot depths. The Fort McHenry turning basin will be maintained or deepened to 50 feet. The South Locust Point Channel will be maintained or deepened to 36-foot depths. All of the channels and anchorages will have side slopes that tie into ambient bottom depths.

5.1.2 Land and Water Use

There are no expected long-term adverse impacts to the land and water use in the project area. The project is consistent with the current land and water use; these uses will not change as a result of the proposed action. Short-term impacts may result during the dredging construction, i.e., boats may avoid or be re-routed in the area. This impact should cease upon completion of the project.

5.1.3 Sediments

No change in sediment quality is expected with the proposed project or adjacent to the project area.

5.1.4 Climate

The project will have no impact on the climate in the study area.

5.2 AIR QUALITY

The project will result in a temporary increase in emissions from barges, tugs, and other construction vehicles involved in the dredging activity. No dredged material is anticipated to become air borne during the operation. This impact is expected to be temporary and occurring only during the actual dredging project. Any increase in ship traffic emissions will be *de minimus*. Emissions produced by the project are not expected to exceed ambient air quality standards. MDE has indicated that the project will be in compliance with the State of Maryland Clean Air Act (CAA) State Implementation Plan (SIP).

5.3 WATER QUALITY

The impacts expected as a result of the revised plan are similar to those discussed in the 1997 EIS but will be slightly reduced due decreased dredging. Changes to water quality in the construction area are expected to be temporary in nature, occurring during the dredging operation. Increases in suspended sediments will occur in the immediate vicinity of the dredging activity as a result of the resuspension of the bottom sediments. Increased turbidity during dredging operations can be managed but not avoided. The effects are localized and short-term because the suspended material settles from the bottom. Turbidity that is usually associated with hydraulic or mechanical dredging will be minor and temporary. The turbidity within the water column should decrease with increasing distance from the dredge site. Water clarity should return to pre-construction conditions once the dredging operation has ceased.

Water quality concentrations of nutrients in the water column during dredging and placement are expected to dissipate quickly and are not expected to result in algae blooms or resulting anoxia in the water column around the dredge site or the placement site. The time of year of dredging affects whether or not enhanced phytoplankton blooms would be expected to occur. If dredging is conducted during the Fall and Winter timeframe, colder water temperature and decreased sunlight are present. This makes some water quality impacts less likely than if dredging were to occur in the Spring and Summer timeframe, when phytoplankton blooms in the Bay are more common, and when anoxic water conditions can exist in deep waters such as the dredging area.

Release of toxic chemicals to the water column may occur from the resuspension of the bottom sediments. However, based on previous dredging experience, short and long-term effects are expected to be negligible due to the fact that the resuspension of dredged material will be minimal, the existing contaminant problem is widespread, and the fauna present is tolerant of exposure.

Deepening of the harbor could exacerbate the existing low dissolved oxygen problem common in the Baltimore Harbor during the summer months. The dredging depths proposed

for the reconfigured anchorages and channels are approximately the same or more shallow depths than proposed in the 1997 EIS with the exception of the East Dundalk Channel which is now 42 feet in lieu of 38 feet deep. Impacts to dissolved oxygen are expected to be similar to those discussed in the 1997 EIS.

Nitrogen releases are expected during the dredging, from the dredged area following dredging, and from the placement site during dewatering operations. Nutrient releases during the dredging operations are expected to be minimal. The nitrogen releases at the dredge site occur as higher concentrations of nitrogen leak from the newly cut channel sediment. These releases are estimated at 0.03 pounds of nitrogen per square meter of channel dredged ("The Nutrient Chemistry of Sediment Dredging, Sediment Nutrient Inventories and Fluxes, 1998 Studies Including Channel Nutrient Inventories and Controls on Sediment Nutrient Fluxes," Dr. Jeffrey Cornwell and Mike Owens, May 5, 1999). Given the estimated area of channel to be dredged for this project, the nitrogen entering the water from the dredged area is estimated at 29,700 lbs. Most of this nitrogen would enter the water in the first two weeks of dredging. Releases of this magnitude would be expected to have a minimal effect on resources. There are many sources of nitrogen into the area and this project will cause a slight increase due to the cumulative effect of other nutrient inputs in the area. Nitrogen releases are expected to occur in the dredged area, but are not expected to have any significant impact if dredging operations are conducted in the late fall, winter, or spring when the water temperatures are low and the water has sufficient oxygen levels.

Experiments indicate that phosphorous is not released from Bay sediments at temperatures less than approximately 15 degrees Celsius (°C) and at oxygen levels that occur in the area during the proposed fall, winter, and spring dredging season (October 1 through April 30). A similar result would be expected in the proposed project area. There are no anticipated releases of phosphorus from the dredging area if the dredging is performed during the late fall, winter, or spring.

The dredged material would be placed within a contained area that is operating under a State of Maryland discharge permit. Some water will be released from the site as part of the typical operations of a dredged material containment facility. The discharges are monitored and are limited to specific amounts of suspended solids and chemicals that can be released. The Hart-Miller Island facility has been operating for more than 17 years and has not released waters that exceeded State water quality specifications since 1993. Monitoring of the groundwater wells at Hart-Miller Island has revealed very little acidification and trace metal migration since 1986.

No significant impacts to water quality are expected as a result of dredged material placement at Hart-Miller Island. Some nutrients will be released from the exposed sediments within the placement site during dewatering. Nutrients are routinely measured as part of Hart-Miller Island water quality monitoring program. At the placement site, nitrogen is estimated to be released through the discharges at a rate of 0.045 pound per cubic yard of dredged material, resulting in a total nitrogen load of 180,000 pounds over the dewatering period from this dredging project. Phosphorous is estimated to be released at the rate of approximately 0.001-pound per cubic yard of dredged material, resulting in total loadings of

4,000 pounds from the project. Nutrient analyses of discharge water and exterior water surrounding the facility will be conducted to monitor nutrient releases associated with the dewatering process.

The site will be strictly monitored by MDE and the discharges are expected to comply with all permits. Consequently, discharges from the operations at Hart-Miller Island that would result of the placement of material from the project are not expected to have a significant impact on water quality or aquatic resources, or increase the level of organic or inorganic contaminants above background concentrations. Each of the five outfall locations at Hart-Miller Island is permitted as a point source discharge, with monitoring requirements and discharge limitations for pH, total suspended solids (TSS), and five metals. The discharge of return water from the placement site as the material is de-watered is expected to meet all MDE discharge permit limitations. Appropriate measures to minimize turbidity will also be implemented in accordance with local, State, and Federal regulations.

5.4 BIOLOGICAL RESOURCES

5.4.1 Benthic Resources

The benthic communities will be displaced and destroyed during the dredging activity. This resource will be impacted again when maintenance dredging occurs every 5 to 7 years after the anchorages and channels are established. However, the pollution tolerant, early-succession benthic populations in the project area are expected to recover quickly once dredging has ceased. A discussion of the impacts to benthics is provided in the 1997 integrated feasibility report and EIS and is hereby incorporated into this document by reference. Monitoring of the biological community adjacent to the Hart-Miller Island placement site has indicated that the water released from Hart-Miller Island has not impacted the ecosystem.

5.4.2 Fish and Wildlife

As the project area does not support a wide variety of fish species due to existing deep depths (17 to 50 feet) and degraded habitat, the proposed project is not expected to have an adverse effect on the fisheries resource. These fisheries resources may temporarily relocate elsewhere during the dredging activity and return to the area upon completion of the construction.

The proposed project is not expected to have an adverse impact on avian species utilizing the area. There may be a minor, temporary effect during the actual construction of the project as birds may be disturbed and avoid the project area. However, once the operation ceases, the bird populations are expected to return to the project area.

5.4.2.1 Essential Fish Habitat

The effects of the dredging activities and the effects of the placement of the dredged material at the Hart-Miller Island facility were evaluated and will have no impact to EFH.

In general, finfish and sensitive spawning periods will not be affected by elevated turbidity in the water column or by nutrient releases from the bottom sediments from in-water construction. Finfish in the Bay are generally used to and tolerant of turbid water quality. It is expected that finfish in the vicinity of in-water activities will leave the area during these events. In addition, no work will occur during spawning season. Turbidity levels at the dredging site are expected to be elevated for a short time during and after the dredging event. It is expected that demersal (bottom-dwelling) species would be potentially more impacted by placement activities than pelagic (water-column) species, since the bottom-dwellers would tend to move less during the dredging.

After late March, negligible nutrient concentrations in the water column are expected relative to ambient conditions in the dredging area. Since dredging will occur in the fall and winter months, low water temperatures will inhibit nutrient fluxes. Nutrient releases into the water column that could potentially occur during this period are not expected to adversely impact sensitive life stages or spawning activities. Nutrient releases during spawning periods (after April) are expected to be only slightly higher than natural nutrient releases in deeper parts of the Bay during warmer months.

There are no direct impacts expected for adult and juvenile bluefish because the proposed dredging will occur in the fall and winter, when bluefish are overwintering off of the southeastern coast of Florida. Adults are not typically bottom feeders and are strong swimmers that can easily avoid turbid conditions. The substrate in the proposed dredging area has either previously been dredged or has such poor quality substrate that there would be minimal use by bluefish for any reason. Furthermore, the low salinities and poor water quality in the project area would limit bluefish and their major prey items from being present.

The proposed dredging will have no effect on the bluefish, its habitat or prey species. Mitigative measures to be taken during the dredging operation include a fall and winter dredging schedule, which will limit impacts to bluefish. No other EFH mitigation measures are proposed since the proposed project will have no effect on bluefish or their prey species.

5.4.3 Submerged Aquatic Vegetation

No SAV exists in the project area, therefore no impacts will occur to this resource.

5.4.4 Wetlands

As there are few wetlands in the harbor, and none in the project area itself, the dredging is not expected to have any impacts to wetlands.

5.5 THREATENED AND ENDANGERED SPECIES

No effects are expected to rare, threatened or endangered species in the project area. The Peregrine Falcons nesting on the Key Bridge are not expected to be adversely affected by the dredging due their distance from the project area. Peregrine Falcons have been delisted since

1997. The Bald Eagles are sufficiently far away and should not be adversely impacted. Bald Eagles have recently been downlisted to threatened status.

5.6 PRIME AND UNIQUE FARMLANDS

There are no prime and unique farmlands in the project area. Therefore, no impacts are expected.

5.7 WILD AND SCENIC RIVERS

The proposed project will have no impact on wild and scenic rivers because there are none in the project area.

5.7.1 American Heritage Rivers Initiative

The proposed project will have no impact on American Heritage rivers, as there are none within the project site watershed.

5.8 RECREATION

The proposed action is expected to have a minor adverse effect on recreation within the study area during the dredging operation. Turbidity caused by the dredging may impact the recreational fishing in the area. While the area supports some recreational fisheries, the area is not commonly used for a fishing area due to its high traffic use by the shipping industry. The time of year that the dredging will take place will occur in a time of reduced recreational boating activity. Any disruption to the recreational boating is expected to be temporary and last only during the dredging operation. Although recreational boating may be restricted during the dredging activity, notice to mariners will be provided to assure that boaters are notified of any closures during the dredging activity.

5.9 CULTURAL RESOURCES

Through agency coordination, the Baltimore District and MHT agreed to relocate the proposed turning basin such that the Target 8 anomaly would be avoided. Therefore, the Baltimore District, in coordination with MHT, has determined that this project will have no effect on cultural resources in the project area. Therefore, Section 106 requirements have been satisfied. Documentation of coordination with MHT and their concurrence with the Baltimore District's findings is provided in Appendix C.

5.10 HAZARDOUS, TOXIC AND RADIOACTIVE SUBSTANCES

There are no known HTRS located in the anchorages and channel locations. Therefore, no significant adverse impacts due to HTRS are expected.

5.11 FLOODPLAIN PROTECTION E. O. COMPLIANCE

The project is not expected to have an adverse impact on floodplains since there are no floodplains in the impact area.

5.12 AESTHETICS

The project is not expected to have an adverse impact on the aesthetic resources in the project area. The actual appearance of the placement site will be disrupted during construction and future maintenance operations. The long-term impacts are likely to be positive once the placement activities are terminated and vegetation is reestablished. Impacts to aesthetics are discussed in the 1997 integrated feasibility report and EIS and are incorporated into this document.

5.13 SOCIO-ECONOMIC

The project is not expected to have an adverse impact on the socio-economic conditions in the study area. The jurisdictions of Baltimore City, Baltimore County, and Anne Arundel County immediately adjacent to the port will likely experience more direct positive impacts than the suburban Maryland jurisdictions and Washington, D.C. However, the proposed work will not affect the population or the educational resources in the area. The project may create additional employment opportunities in the area during the construction (dredging) of the project. This impact is expected to be minor, short-term and cease with the completion of the work. The proposed improvement of the anchorages and channels will not have an adverse effect on the industry and transportation in the area. The proposed project should produce a beneficial economic effect, as it will facilitate the maneuverability of vessels that use the harbor. No additional impacts from those discussed in the 1997 EIS are expected.

5.13.1 Environmental Justice E. O. Compliance

There are no minority or low-income populations located within the project area. Therefore, no significant adverse impacts under Executive Order 12989 are expected.

5.13.2 Children's Safety E. O. Compliance

The project will not adversely affect children and will be in compliance with Executive Order 13045. The project will not directly impact any area commonly used by children nor will it expose children to materials having an adverse effect on their health or safety. Access to the dredging area and equipment will be restricted to the contractor and authorized persons during the course of the dredging activity. The placement site is privately owned and has controlled access to prevent anyone from entering the site.

5.14 CUMULATIVE EFFECTS

There are no significant changes in cumulative impacts anticipated due to the revised locations of the anchorages and channels from those documented in the 1997 EIS. The

proposal is consistent with the current navigational use of the area. Natural resources are scarce, nonexistent, or degraded in the project area. The dredging activity will not cause additional loss of these resources. However, as the channels and anchorages are established, the project maintenance would preclude these areas from reverting back to shallow depths. All of the areas proposed for dredging are currently at least 17 feet deep and cannot be considered valuable shallow water habitat, which is defined as less than 2 meters in depth.

The anchorages and channels project is proposed to assist the vessels that currently use the harbor. The changes to the proposed dredging activity are designed to more efficiently handle current and anticipated future traffic. Development of the area has already occurred and any new proposals in the area would be subject to the current environmental regulations and policies. Redevelopment of the adjacent waterfront may actually benefit the area, as it would be required to meet new stormwater regulations and guidance to improve water quality in the receiving waterway.

Placement site issues (i.e., adequate capacity at existing sites, provision of new sites) will need to be addressed as other harbor dredging activities, including maintenance dredging, continue to be required to keep the harbor a productive navigational area capable of supporting the existing industry in the area, as well as keeping competitive with other ports. Maintenance dredging will require further use of the Hart-Miller Island facility or other placement sites. Use of the Hart-Miller Island placement site for this project will eliminate or minimize the capacity that could be used by other dredging projects. As there are a limited amount of areas that lend themselves to the development of contained placement sites, some dredging projects may be adversely affected due to lack of placement sites or would require further study of proposed placement sites. Maintenance dredging cycles for the proposed action are the same as documented in the 1997 EIS.

During future maintenance dredging there may be a minimal increase in nutrient or toxic releases from the substrate. This impact will be short-term in nature and limited to the duration of the dredging activity. This effect will dissipate upon completion of the dredging activity. Any nutrients or toxins released at the placement site, Hart-Miller Island, have been and will continue to be considered during the placement facility's permit evaluation. Monitoring is required to ascertain that State water quality standards are being met.

5.15 ENVIRONMENTAL PERMITS AND REGULATORY COMPLIANCE

For an activity or site to be environmentally acceptable, the location, design, and operation must be in compliance with a number of environmental protection statutes and executive orders. The compliance with these statutes and executive orders for the anchorages and channels project was reviewed under the 1997 integrated feasibility report and EIS. The environmental impacts of the proposed action (constructing the anchorages and channels in new locations) has been discussed in this supplemental EA, and a review has been made under the Clean Water Act, the Endangered Species Act, and the National Historic Preservation Act. A State of Maryland water quality certification that expires on October 24, 2004 is included in Appendix C. Because there is a current water quality certification for placement of the dredged material at the Hart-Miller Island placement site, which requires

monitoring of the discharge, and the activity of dredging itself does not require Section 401 or Section 404 authorization, no additional authorizations are legally necessary. The original project was evaluated under the Section 404(b)(1) guidelines for the 1997 integrated feasibility report and EIS to demonstrate compliance with State water quality standards. A Section 404(b)(1) analysis was conducted for the revised project and its impacts to the aquatic environment and is included in Appendix B.

5.15.1 Coordination

The Baltimore District Corps of Engineers coordinated the proposed project with Federal and State of Maryland agencies, as well as the general public, under the EIS process. All project activities are in the State of Maryland. As a part of the preparation of the supplemental EA, a public notice dated August 25, 2000 was issued indicating that the District intended to prepare a draft supplemental EA and was soliciting comments from agencies and the general public on the actions being evaluated. A public notice indicating the availability of the draft supplemental EA was issued on March 7, 2001. The public notice indicated that comments on the draft supplemental EA would be accepted for a 30-day period. Water quality certification and consistency with the State of Maryland's Coastal Zone Management Program has been received. The project described in the 1997 EIS was found to be consistent with the State of Maryland's Coastal Zone Management Program by letter dated March 7, 1997 from the Maryland Department of the Environment.

During the study design, the Corps coordinated with the Maryland Association of Pilots to determine safety and efficiency factors in the design. The MPA, the local sponsor, met with agencies and the public regarding the proposed project through formal and informal meetings. The Maryland Port Administration sponsored meetings, at which the project was considered involved the Citizens Committee, the Hart Miller Island Citizens Committee, (Hart Miller Island is the proposed placement site), the Management Committee which includes state and Federal agencies, the Bay enhancement work group, and at the bulk carriers representatives meeting.

The following resource agencies were coordinated with throughout the study process:

U.S. Environmental Protection Agency
U.S. Department of the Interior, Fish and Wildlife Service
U.S. Department of Commerce, National Marine Fisheries Service
Maryland Department of the Environment
Maryland Department of Natural Resources
Maryland State Historic Preservation Office

5.15.2 Comments and Response

All correspondence received is located in Appendix C. The Baltimore District's responses to these comments are given below.

Comments received on the March 2001 Draft Supplemental EA

Phone Conversation dated March 28, 2001 between Mr. Roland Limpert, MdDNR and Mr. Mark Mendelsohn, USACE, indicating that MdDNR would have no comments.

Phone Conversation dated March 27, 2001 between Mr. Timothy Goodger, NMFS, and Mr. Mark Mendelsohn, USACE, indicating that NMFS would have no comments.

Phone Conversation dated April 23, 2001 between Mr. Thomas Slenkamp, EPA Region III, and Mr. Mark Mendelsohn, USACE, indicating that EPA would have no comments.

Phone Conversation dated March 27, 2001 between Mr. Elder Ghigiarelli, Maryland Department of the Environment (MDE) and Mr. Mark Mendelsohn, USACE indicating that MDE would have no comments.

Letter received from the U.S. Fish and Wildlife Service (USFWS) dated April 23, 2001, stating that USFWS would have no comments.

Letter received from Mr. John M. Williams dated April 6, 2001.

Comment #1

Mr. William's April 6, 2001 letter included several comments on benefit/cost ratios, the validity of the District's economic assumptions, and the model used by the USACE to justify construction of the project.

Response

In consultation with the District's Office of Counsel, the District does not consider these comments germane to the preparation of a NEPA document and has determined that a response is not required in the final EA. However, the District is addressing Mr. Williams's concerns about benefit/cost ratios and economic assumptions in a Limited Reevaluation Report (LRR) that will be available to the public in 2001. A discussion of socioeconomics, as required by NEPA, is provided in sections four and five of this EA. These sections address the impacts of the proposed project on the nearby population and the nation.

Comment #2

The EA does not adequately address cumulative impacts. "A true consideration of cumulative impacts would examine the environmental effects that have occurred in the last 75-100 years, as the Baltimore Harbor and Patapsco River has been repeatedly dredged to provide numerous channels and anchorages with depths up to 50 feet (plus advanced maintenance plus overdepth). For example, the cumulative dredging and deepening has exacerbated the low dissolved oxygen problems in the harbor. Similarly, the cumulative dredging has released considerable nitrogen (N) into the waters of the Chesapeake Bay (about 50,000#N/mcy dredged). Please explain why the District

provided such a limited discussion of cumulative impacts and what the District intends to do to address this shortcoming."

Response

NEPA does not require an agency to perform a 75 to 100-year analysis if the historic conditions are not considered as viable alternatives that could be restored. It is unlikely that an accurate 75 to 100-year analysis could be meaningfully performed given the many non-dredging related changes to Baltimore Harbor and the Bay. For example, some of the major beneficial changes that improved conditions in the region include the reduction in point sources such as raw sewage, the discontinuance of chrome ore processing, and changes in industrial use classifications. Some negative changes that have affected the Bay include the increase in airborne pollutants from coal burning plants in the midwest and from automobiles, the extremely destructive 1936 storm, the increase in population in the area, the increase in nutrients due to large scale agricultural practices, the increases in impervious surfaces and erosion, and the loss of tree cover, in addition to other changes.

In reference to the comment that dredging exacerbated the reduction of dissolved oxygen (D.O.) in the harbor, this cannot be stated with certainty given all the other exacerbating conditions listed above and the limited water circulation in the harbor. Additionally, the material that will be removed from the water column as part of the proposed project and the associated nutrient releases will be controlled under a MDE discharge permit.

The District considers that nutrient related issues were adequately addressed in Water Quality Section 5.3 of the draft supplemental EA, in the Clean Water Act 404(b)(1) analysis included in Appendix B of the draft supplemental EA. In addition, the District feels that cumulative impacts were adequately addressed in the Cumulative Impacts Section 5.14 of the draft supplemental EA.

Comment #3

Mr. Williams commented that "the recommended plan of the IFR is the No Action alternative in the EA and the volumes to be dredged are different in the two reports. The IFR (Table 6.4) reports 4,398,200 cy and the EA Appendix A, Table 1 reports 3,771,279 cy".

Response

The reduction in material volume is due to the turning basin being relocated into an area of deeper water, and that the MPA has dredged some of the East Dundalk Channel at its own expense.

Comment #4

Comparison of "No Action" Alternative (EA) with Recommended Plan (IFR): The recommended plan of the IFR is the same as the no action alternative in the EA; they are the same combination of anchorage and channel "improvement". Why is the "First Costs" of "the no-action alternative different from those of the recommended plan …in Table 6.1? The totals (exclusive of mobilization and demobilization) are $16,179,257 and $26,843,923, respectively. That is a big discrepancy."

Response

Table 6.1 in the IFR included 15-percent construction cost (an estimated 3.5 million) for design and construction management and mobilization and demobilization costs. These costs are not included in the $16,179,257 cost referred to by Mr. Williams in the EA table. As time goes by, estimates of dredging costs are being continuously refined. The estimate being presently prepared includes the most recent data available.

Letter dated June 15, 2001 from Mr. John Williams

Comment #1

There are significant differences between IFR and EA values for the pertinent parameters of dredged quantity, costs, and benefits.

Response

The differences in the material quantities and the costs are addressed in the above response to (Comment 4) Mr. Williams' April 6, 2001 letter.

The difference in total annual cost between the three plans relates directly to the differing investment cost values. The bulk of the annual cost is derived by annualizing the investment cost over a 50-year period with a set interest rate (7 3/8% in this case). Costs stated on page 3 of the Mr. Williams' correspondence were: IFR-Plan costs of $2.27 million, the EA (IFR Plan costs of $1.841 million, and the EA-Plan 7 of $2.0 million respectively). The total Annual Benefits and the BCR are significantly different due to the duration used for their calculation. The total annual benefits of IFR-Plan 5 of $9.8 million was calculated using a 50-year period. The EA (IFR Plan) value of $3.5 million was based on a 10-year period, as was the EA-Plan 7 value of $3.97 million. The BCR for IFR-Plan 5 of 4.3 was calculated using a 50-year period. The lower EA BCR values of $1.92 million (IFR) and $1.98 million (Plan 7) are due to the time frame used for these computations.

Comment #2

Several comments on the Ship Traffic Simulation Model.

Response

The District will address these types of issues in the LRR.

Comment #3

Insufficient attention was given in the EA or IFR to non-structural alternatives that alleviate the "claimed" harbor congestion.

Response

Vessel traffic management systems (VTMS) were considered during IFR study phase and were addressed in Section 3.2.3 of the final feasibility report. Representatives of the District attended sessions on VTMS at the national Ports '95 conference in Tampa Florida. Experts on VTMS at the conference were queried about the feasibility of using the system in Baltimore. Additionally, the MPA has conducted its own investigations on the use of VTMS.

The Baltimore Maritime exchange is responsible for tracking the Estimated Time of Arrival (ETA) for vessels calling on the Port of Baltimore. In today's commercial shipping industry scheduling of vessel movements is subject to significant delays, both at berth and at sea. Vessels are often delayed while waiting for a letter of credit or due to mechanical difficulties. As a result, attempting to pass large Cape-size vessels in the angle of the main shipping channel (currently, the only area between Baltimore and Annapolis that is wide enough to attempt this maneuver) is difficult to coordinate and generally is not practiced by the pilots. Additional problems with scheduling traffic and traffic management were identified during the District's study process. In many situations, vessels occupy the anchorage areas longer that the standard 2 or 3-day limit authorized by the U.S. Coast Guard. Other vessels in need of safe anchorage are required to travel to the Annapolis Anchorage, 25 miles south of Baltimore. Consequently, the District determined that because of the layout of the harbor, the use of the Annapolis Anchorages, and other factors, a VTMS would not be a feasible alternative.

Comments received prior to the release of the March 2001 Draft EA and addressed in the Draft EA

Letter received from Mr. John M. Williams dated August 27, 2000.

Comment #1

Is the cost benefit analysis being reworked or revised?

Response

Costs have been updated annually since the final feasibility report in March 1997, but a full recalculation of costs and benefits has not been completed. Corps of Engineers

guidance dictates that recalculation is not required within three calendar years of the Chief of Engineers report, which was signed on June 8, 1998. The guidance is in recognition of the fact that to accurately calculate a revised benefit-cost ratio each year would be extremely time consuming and expensive.

Comment #2

Are additional studies ongoing as part of the preconstruction engineering design (PED) activities?

Response

The District is preparing the following studies: an LRR, a draft supplemental EA, surveys, ship simulation study, and a value engineering study to reduce construction costs and maximize benefits.

Comment #3

What is the current schedule for completion of PED, appropriation of funds, and construction?

Response

The LRR will be completed in 2001 and dredging is expected to begin in the fall of 2001. Three million dollars has been appropriated for construction.

Comment #4

Request for Record of Decision (ROD) and Supplemental EA.

Response

The ROD was mailed on October 5, 2000. The draft supplemental EA was distributed to the public in Spring 2001.

Other Correspondence

A letter was received from the Maryland Department of Planning, State Clearinghouse Review dated October 18, 2000. The State Clearinghouse requested comments from the Maryland Departments of Business and Economic Development, Housing and Community Development including the Maryland Historical Trust, Natural Resources, Transportation, and the Environment; Baltimore City and Baltimore County; and the Maryland Department of Planning. All reviewers responded and found this project to be consistent with their plans, programs, and objectives.

6.0 CONCLUSIONS

The proposed revisions to the Baltimore Harbor Anchorages and Channels Project (described in Section 2.1) are still within the scope of the original proposal discussed in the 1997 integrated feasibility report and EIS since the study area, type of work, and the resources to be affected are the same. The revisions are recommended to address concerns raised regarding maneuverability of vessels within the proposed anchorages. Widening of the South Locust Point Channel where it intersects with the berthing area eliminates the difficulty when exiting from the berthing area. This larger area will accommodate the passage of two vessels. The Fort McHenry turning basin was reconfigured to facilitate the turning of ships in the area. Anchorages #3 and #4 were reconfigured to provide a shallower area in Anchorage #4 and to increase the size of Anchorage #3. This reconfiguration allows more flexibility for both large draft and small draft vessels, and was shown to have a higher benefit-cost ratio than the 1997 recommended plan.

As mentioned in both sections 2.2 and 4.4, the dredged material will be placed in the State of Maryland-permitted Hart-Miller Island confined upland placement facility. More information on the Hart-Miller Island placement site may be found in the 1997 EIS

Although design changes are proposed, the degree of impact to the area from the overall project has not changed substantially from the 1997 authorized plan. The proposed work does not significantly differ from the original proposal and it does not have significant adverse impacts to the environmental resources or people in the project area.